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MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS IN KOHIMA TOWN, NAGALAND

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ABSTRACT

Every learner needs the basic knowledge of Mathematics to live a fulfilling and contented life. Due to its wide applicability in one's daily life and in varied fields of knowledge, Mathematics is considered as one of the major and compulsory subject in the school curriculum. Despite, Mathematics being a significant subject in the school curriculum, it is considered the most dreaded subject by learners. Secondary school students appear board exams and Mathematics being one of the major subject makes them more anxious towards the subject. Thus, the present study is aimed at finding the Mathematics Anxiety level of secondary school students with respect to Gender, Type of Management and Class Level. The study was conducted on a sample size of 380 secondary school students. The result of the study revealed that there was no significant difference in the level of Mathematics anxiety between male and female; Private and Government; and class 9 and class 10 students. The study also revealed that the majority of the secondary school students had an average level of Mathematics anxiety.

KEYWORDS: Mathematics Anxiety, Type of Management, Gender, Class Level.

INTRODUCTION

Mathematics is indispensable in human lives as it helps an individual to live in a society and understand the world in which they live. Its knowledge is used by every individual in carrying out day to day life activities. Problem-solving, critical thinking and creative thinking are some of the important life skills which are inculcated through teaching-learning Mathematics. Mathematics is the backbone of a country's growth and development as no progress can take place without advancement in the field of Mathematics. It serves as the foundation of modern society. In this fast changing technological world it is impossible to move forward without mathematical knowledge.

Due to its immense practical value, Mathematics occupies an important place in the school curriculum. Its importance has been recognized and acknowledged by various Educational Policies and Commissions in India.

Education Commission, 1964-66 states that "Science and mathematics should be taught on a compulsory basis to all pupils as a part of general education during the first ten years of schooling " (p.365). National Policy on Education, 1986 also recommended that

"Mathematics should be visualized as the vehicle to train a child to think, reason, analyze, and articulate logically. Apart from being a specific subject it should be treated as a concomitant to any subject involving analyzing and meaning" (p.23).

Despite, Mathematics being an important subject in the school curriculum, it is considered the most feared and anxious subject by learners. National Focus Group on Teaching of Mathematics (2006) in their report pointed out that there is often fear and anxiety among children when it comes to Mathematics learning. The document also stated that mathematics is the subject area that elicits the most emotional responses.

In Nagaland, the mere mention of the school subject mathematics causes fear in most children. When compared to other school courses, it is the subject that most students dread the most. The perception of the subject's difficulty begins at home. Because most parents find it difficult to guide their children in the topics of mathematics, private mathematics tutoring is in high demand. The perception that mathematics is a difficult and challenging topic that is established in a student's early years has produced a fear of mathematics, and pupils grow up thinking of it as such. Analyzing the Nagaland Board of School Education (NBSE) High School Leaving Certificate (HSLC) Result Gazette, from 2018 to 2020, published by NBSE, Kohima, it is obvious that Mathematics is one of the subjects that the majority of secondary students find difficult. The passed percentages of students in the subject of mathematics are 45.85, 44.35, and 38.87 in the year 2018, 2019, and 2020 respectively. Mathematics Anxiety may be one of the many reasons why secondary students perform poorly in the HSLC exam.

Mathematics Anxiety.

American Psychological Association defined anxiety as " an emotion characterized by feelings of tension, worried thoughts, and physical changes like increased blood pressure". Many learners perceive Mathematics as difficult, which makes them anxious towards learning the subject.

Mathematics Anxiety refers to stress, fear, worry and nervousness that learners have about Mathematics. It is an emotional experience about Mathematics where learners worry

about one's own capacity to comprehend and do mathematics.

Richardson & Suinn (1972) defined Mathematics anxiety as "feelings of tension and anxiety that interfere with the manipulation of numbers and the solving of mathematical problems in a wide variety of ordinary life and academic situations" (as cited in Ibrahim Burak Olmez & Serkan Ozel ,2012,p.4933). Mathematics anxiety has been referred to "such unhealthy mood responses which occur when some students come upon mathematics problems and manifest themselves as being panicky and losing one's head, depressed and helpless, nervous and fearful, and so on" (Xinbing Luo et.al. 2009,p.12-13)

Mathematics anxiety is more than just a dislike of the subject. It is defined as "panic, helplessness, paralysis, and mental disorganization that arises among some people when they are required to solve a mathematical problem" (Fiore,1999, p. 403).

Mathematics Anxiety is real and may have detrimental effect on learners performance leading to avoidance of Mathematics. Mathematics anxiety occurring among secondary students may contribute to difficulties in learning mathematics. Therefore, it is essential to study it. Result of the study will be beneficial for the stakeholders of the education community to improve Mathematics education, help learners develop positive attitude towards the subject and also makes learning more fun and enjoyable as envisaged in National Curriculum Framework(NCF) 2005.

Objectives

1. To determine the level of Mathematics Anxiety among Secondary School Students.
2. To compare Mathematics anxiety of secondary school students in relation to Types of School, Class Level and gender

Hypotheses

1. There is no significant difference between mathematics anxiety of secondary school students with respect to Types of School.
2. There is no significant difference between mathematics anxiety of secondary school students with respect to Class Level.
3. There is no significant difference between mathematics anxiety of secondary school students with respect to gender.

METHODOLOGY

Descriptive Survey Method was adopted for the purpose of the study .The population of the present study comprised of the Secondary School Students in Kohima town, registered under Nagaland Board of Secondary Education ,Nagaland. The sample consist of 380 secondary school students selected using simple random sampling

RESEARCH TOOLS

The Research tool used for the study was 'The mathematics Anxiety Scale', developed by Sadia Mahmood and Tahira Khatoon to measure the Mathematics Anxiety level of secondary school students.

Statistical Techniques Used

For the present study the researcher used statistical techniques like Mean, Standard Deviation and t-test.

RESULT AND ANALYSIS

Objective 1: To determine level of Mathematics Anxiety among secondary school students.

Range of z-score	Level of Mathematics Anxiety	Frequency	Frequency%
+ 2.01 and above	Extremely High Anxiety	8	2.11
+1.26 to +2.00	High Anxiety	41	10.79
+0.51 to + 1.25	Above Average Anxiety	75	19.74
-0.50 to +0.50	Average Anxiety	132	34.74
-0.51 to -1.25	Low Anxiety	76	20
-1.26 to -2.00	Very Low Anxiety	44	11.58
-2.01 and above	Extremely Low Anxiety	4	1.05
Total		380	100

Table 1: Anxiety level of Secondary School Students towards Mathematics.

As per Table 1, following are the findings

2.11% of secondary students showed 'extremely high' level, 10.79% showed 'high' level , 19.74% showed 'above average' level and 34.74 % showed 'average' level of Mathematics Anxiety. 20% showed 'low' level ,11.58 % showed 'very low' level and 1.05 % showed 'extremely low' level of Mathematics Anxiety. Thus, the result clearly indicated that majority of the students have average of mathematics anxiety.

Objective 2 : To compare Mathematics anxiety of secondary school students in relation to Types of School.

Hypothesis 1: There is no significant difference between mathematics anxiety of secondary school students with respect to Types of School.

Type of School	N	Mean	SD	df	'P' value	Remarks
Government	75	42.35	8.50	378	0.46	Not significant at 0.05 level
Private	305	43.20	9.06			

Table 2 : Result of t-test in respect Mathematics Anxiety scores of Government and Private secondary school student

As per Table 2, it was observed that the mean score of government and private school student towards Mathematics Anxiety were 42.35 and 43.20 with standard deviation 8.50 and 9.06 respectively. It was observed that the 'P' value (0.462) for Mathematics Anxiety between government and private school students is higher than the significance level of 0.05. Thus ,the

result shows that there is no statistically significant difference between government and private school students with regards to Mathematics Anxiety. Therefore, we failed to reject the null hypothesis that there is no significant difference between mathematics anxiety of secondary school students with respect to Types of School.

Hypothesis 2: There is no significant difference between mathematics anxiety of secondary school students with respect to Class Level.

Class Level	N	Mean	SD	df	'P' value	Remarks
Class 9	169	43.20	9.24	378	0.74	Not significant at 0.05 level
Class 10	211	42.89	8.72			

Table 3: Result of t-test in respect of Mathematics Anxiety scores of Class 9 and Class 10 secondary school students

As per Table 3, it was observed that the mean score of Class 9 and Class 10 school students towards Mathematics Anxiety were 43.20 and 42.89 with standard deviation 9.24 and 8.72 respectively. It was observed that the 'P' value (0.74) for Mathematics Anxiety between Class 9 and Class 10 school students is higher than the significance level of 0.05. Thus ,the result shows that there is no statistically significant difference between Class 9 and Class 10 school students with regards to Mathematics Anxiety. Therefore, the null hypothesis that there is no significant difference between mathematics anxiety of secondary school students with respect to Class Level is not rejected.

Hypothesis 3 : There is no significant difference between mathematics anxiety of secondary school students with respect to gender.

Gender	N	Mean	SD	df	'P' value	Remarks
Male	185	42.32	8.84	378	0.14	Not significant at 0.05 level
Female	195	43.70	9.03			

Table 4: Result of t-test in respect Mathematics Anxiety scores of Male and Female secondary school students.

As per Table 4, it was observed that the mean score of Male and Female school students towards Mathematics Anxiety were 42.32 and 43.70 with standard deviation 8.84 and 9.03 respectively. It was observed that the 'P' value (0.14) for Mathematics Anxiety between Male and Female school students is higher than the significance level of 0.05. The result thus indicates that there is no statistically significant difference between Male and Female school students with regards to Mathematics Anxiety. Therefore, the null hypothesis that there is no significant difference between mathematics anxiety of secondary school students with respect to gender is not rejected.

DISCUSSION

Research results revealed that there is no significant difference between private and government school students with regard to mathematics anxiety. The result indicated that mathematics anxiety is not influenced by the type of school which is in agreement with the study of Ibrahim Burak Olmez & Serkan Ozel (2012), however, the result contradicts the findings of Mandal A.K, & Bijoya S.(2019), and Khatoon T., & Mahmood S. (2010).

The study found no significant difference between students of class 9 and class 10 with regard to mathematics anxiety. The result showed that mathematics anxiety is not influenced by the grade level of students. This findings is supported by the study of Yüksel, S.F (2008), Ibrahim Burak Olmez (2012) which revealed that there is no significant difference in students' mathematics anxiety level with respect to their grade level. However, the present findings contradict the studies of Luo Xinbing et al., (2009), which showed that Mathematics anxiety in every grade displays a certain tendency.

The present study revealed that there is no significant difference between male and female students with regard to mathematics anxiety levels. The result implies that Mathematics Anxiety exists in all secondary students and that it is not affected by gender. The present study is in concord with the findings of Zakaria E. et at., (2012), Yadav S., & Singh P.N. (2018), who reported no significant difference in mathematics anxiety between male and female students. But the present findings contradict the findings of Yüksel, S.F (2008), Luo X. et al., (2009), Khatoon T., & Mahmood S.(2010), who reported that female students have higher Mathematics Anxiety Level than male students.

SUGGESTIONS.

1. Awareness about mathematics anxiety and strategies to deal with it should be deliberated through programmes and discussions in the schools.
2. Teaching learning of mathematics should focus on understanding rather than on memorization .
3. Discovery approach can be adopted at the lower classes especially when mathematical concepts are introduced to enhance the conceptual understanding of Mathematics. Learners should be engaged in exploring, thinking, practicing, and using mathematical knowledge rather than remaining passive recipients of knowledge.
4. Teachers and parents should encourage and support learners in learning Mathematics. They must boost the confidence level of the learners and provide them the needed academic support.
5. Mathematics curriculum should be related to real life activities and experiences of the learners filled with fun and interesting activities.

CONCLUSION

A nation's progress depends on the ability to contribute effectively and efficiently to technological advancement as science and technology advance. Since mathematics is the foundation for all progress, every effort must be made to improve mathematics education. The present study in a small measure has paved way for a good direction in mathematics education by enhancing the knowledge of mathematics anxiety among secondary school students. Teachers, parents,

administrators, curriculum planners and students should adopt and implement appropriate measures and strategies to reduce mathematics anxiety which can improve students performance and learning in Mathematics.

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